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Issue Paper I

PERSPECTIVES OF INTERREGIONAL CO-OPERATION IN THE AGRICULTURAL MACHINERY INDUSTRY, WITH EMPHASIS ON SMALL- AND MEDIUM-SCALE ENTERPRISES*

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I. INTRODUCTION AND BACKGROUND

1. As a result of the global economic recession the agricultural machinery industry is experiencing a sharp reduction in world demand, especially for tractors and combine harvesters, but also for most items of tractor-drawn equipment. This is true in the majority of developing countries; therefore, their markets have not proved to be the abundant source of fresh demand on which manufacturers in the developed countries had been relying.

2. The reduction in market size has resulted in very severe competition and a deterioration in the situation of manufacturers. World production capacity has had to take account of the reduction in demand; however, available supply is still some 20 per cent in excess of the present effective demand.

3. These difficulties have led large manufacturers to formulate new strategies. The companies that are most highly organized at the world level are entering into technical, economic and commercial agreements with one another that result in the exclusion of newcomers from the market. As shown by indicators such as the concentration of plants, the transnational companies prefer to maintain their hold on areas in which they have experience and are solidly established (e.g. large motorized equipment) rather than to diversify or seek breakthroughs in markets that they consider limited.

4. Small- and medium-scale enterprises in developed countries, although they have unused production capacity which could be mobilized for joint ventures or licensing contracts, are reluctant to transfer their expertise for product design and manufacturing, primarily because they lack the experience in developing countries and information necessary to enable them to enter into such agreements with confidence.

5. The future of the world agricultural machinery industry depends on the quantitative and qualitative development of its markets and, in particular, on the models of agricultural mechanization adopted by countries. The models

adopted are closely interrelated with the agricultural and industrialization policies and methods of manufacturing of these countries. The dominant model to date has been heavy mechanization, using tractors coupled with tractor-drawn machines, which has been widely adopted in developing countries, often without giving adequate consideration to local conditions.

6. In this context, as has been shown at previous Consultations and meetings on the agricultural machinery industry, agricultural machinery and equipment has to be considered in the broadest sense, covering a wide spectrum of products from hand tools, animal-drawn implements, and hand-operated machines, irrigation equipment and crop protection machinery; to power machinery and equipment such as tractors, power tillers, engines and combines, as well as specialized single-purpose machines and equipment. Also included is the equipment needed for storage, transport and primary processing of agricultural raw materials. 1/

7. In the majority of developing countries the model of heavy agricultural mechanization runs into various obstacles: structural (the size of farms), ecological (fragile tropical soils), financial (solvency of farmers), etc. These obstacles make it necessary to develop other policies directed towards food self-sufficiency, such as the intensification of agricultural production. In this case, agricultural mechanization must be implemented on the basis of diversified capital goods designed for small, decentralized farms with little specialization, an abundant labour force, and limited financial resources. Neither the supply from industrialized countries nor the range of products marketed by the transnational corporations is appropriate to satisfy these needs. Moreover, imported equipment frequently poses many difficulties for developing countries. Equipment and machinery designed and manufactured in developed countries often has to be modified or completely redesigned to ensure mechanical reliability and suitability to local conditions, a process which proves to be highly costly and inefficient.

1/ See: "The agricultural machinery industry in the 1980s: factors for international co-operation" (ID/WG.400/1).

8. In addition to the structural, ecological, financial and other problems encountered by the heavy tractorization model, this model has not been able to increase agricultural output sufficiently in developing countries. The annual rate of growth of agricultural output in developing countries in the past decades was just 3 per cent, and due to the rapid population growth in this period, per capita output growth was only 0.3 per cent per year. This average conceals considerable differences; the per capita output growth rate was 1.4 per cent in South-East Asia, 0.6 per cent in Latin America, and -1.1 per cent in Africa. 2/

9. FAO has estimated that, in order to be able to meet the triple challenge posed by hunger, increasing population, and underdevelopment by the year 2000, agricultural production in the developing countries would have to increase by an average of 3.9 per cent per year, instead of 2.6 per cent as it has over the last decade.

10. Agricultural machinery manufacturing is a branch of industry which can make a major contribution to increasing both agricultural production and industrial output in developing countries. However, the present share of developing countries in the total world production of all types of agricultural equipment is estimated to be only approximately 6 per cent.

11. At present in Africa, local production of agricultural machinery covers only 5 per cent of the total apparent demand of about $ 1.5 billion per year; as a result the market is dominated by imports. In view of the balance of payments constraint on imports of capital goods in many developing countries, it is clearly to their advantage to fulfil as much of their demand as possible through domestic production rather than through imports. Developing the agricultural machinery industry would also serve as an entry point to the capital goods industries, while meeting the priority needs of farmers and helping to increase food production.

2/ See: World Bank, Toward Sustained Development, A Joint Programme for Sub-Saharan Africa, 1984.

12. Thus, it is clear that there is a need to strengthen the indigenous capacity for production and maintenance of agricultural machinery and implements suited to local farming methods. The achievement of this goal would require the introduction of appropriate technology, making use of local resources and manpower. Agricultural machinery development in Africa should be conceived so as to increase both the quantities and range of products manufactured as well as to increase the value added.

13. Large investments will be necessary to achieve these goals. The costs of these investments are undoubtedly beyond the present financial capabilities of African countries and will require external assistance in finance, transfer of technology, research and development, and training. This assistance can only be achieved through co-operation between developed and developing countries, and between the developing countries themselves.

II. A NEW APPROACH TO MEET THE NEEDS OF DEVELOPING COUNTRIES

14. Taking into account the need for appropriate/intermediate technologies to meet the diverse needs of developing countries, greater efforts should be made to locate alternative sources of supply of agricultural machinery and implements and assistance in developing domestic production capacity. Increased trade and co-operation with other developing countries could also enlarge the markets served by the producer countries, which is essential for achieving economies of scale in production and would be of mutual benefit to all concerned.

15. Considering the development experience of Asia and Latin America and the Caribbean in the field of agricultural machinery in relation to that of Africa, it is necessary to examine the industrial possibilities and technical capabilities in each region and identify industrial complementarities between regions with the objective of proposing practical mechanisms to facilitate interregional co-operation. 3/

3/ See: "Report of the Expert Group Meeting on the Establishment of Multinational Production Enterprises in Developing Countries, 25-28 November 1985" (UNIDO/PC.133).

16. The probability of sucess in joint undertakings for the production of agricultural machinery is most likely to be higher between countries with similar agro-ecological conditions. Over the years each developing country has developed some strengths, not only in importing and assimilating technologies, but also in developing appropriate manufacturing technologies and products or building research and development institutions. It should be of great interest to assess these strengths and to explore possibilities of co-operation to enhance them for the mutual benefit of the countries involved.

17. Many of the more advanced developing countries such as Algeria, Argentina, Brazil, India, Malaysia, Mexico, Thailand, Turkey, Yugoslavia and Zimbabwe have progressed in producing and assembling certain types of agricultural handtools (hoe, pickaxe, shovel, etc.), animal- and tractor-drawn implements (plough, seeder and fertilizer drill, etc.), power tillers, tractors, combine harvesters and other machines and equipment that are appropriate to the requirements of developing countries. This was based on the formulation and implementation of deliberate policies of agricultural development and mechanization by the Governments of these countries.

18. However, so far, interregional co-operation between developing countries is rather limited, particularly with African countries, due to their strong orientation towards neighbouring subregional and regional markets and the lack of finance for trade guarantees and for potential investments abroad.

19. Furthermore, existing co-operation between developing countries is restricted mainly to trade, not production, and is mostly of an intra-regional nature. In 1980 the exports of agricultural machinery from 13 developing countries amounted to nearly $ 163 million (at constant 1975 prices). The share of Latin America in these exports was 88 per cent, of which 85 per cent was accounted for by Brazil alone, followed by Argentina, Mexico, Colombia and El Salvador. Asia's share was about 11 per cent, led by Singapore which accounted for about one third of the exports of agricultural machinery by Asian developing countries. Africa's exports were less than 1 per cent of the

total. About 80 per cent of developing countries' exports of agricultural machinery are directed to other developing countries, the majority of those being intra-regional trade. 4/

20. From the above it appears that South-South co-operation has been more effective at the subregional and regional levels than at the interregional level. A number of factors including geographic proximity, certain common traditions and cultural ties would tend to explain the present status of co-operation.

21. Intra-regional trade is expected to be the main growth area in Asia and Latin America and the Caribbean. However, producers in these regions are also expected to increase their penetration of markets in the Near East and Tropical Africa, where the South supplied less than 6 per cent of total imports of capital goods, including agricultural machinery, in 1979. Some countries, such as Brazil and India, have begun to supply other developing regions; about 30 per cent of the latter's exports went to African countries.

22. The experience gained in intra-regional and interregional trade should be reviewed and co-operation should be expanded, based on a consideration of the advantages to be gained from an exchange of appropriate technologies and experience in product designs, manufacture, use, repair and maintenance, and research and development in the field of agricultural machinery and implements.

23. A survey of users, dealers and producers of agricultural machinery in different African countries conducted on behalf of UNIDO confirmed that products manufactured in countries with similar climatic and soil conditions (e.g. Asia, Latin America and the Caribbean) can be profitably adapted for use under African conditions. It was also observed that manufacturing technology transferred from other developing countries is more appropriate to the local production environment of developing countries, particularly in Africa. 5/

4/ See: "A survey of Latin American agricultural machinery industry" (UNIDO/IS.407), 1983.

5/ See: "Perspectives of South-South co-operation in the agricultural machinery industry" (ID/WG.462/9).

24. The survey showed further that in African countries it was seen as advantageous to upgrade existing plants and develop medium-sized units for the production of animal-drawn implements and hand-operated machines, using intermediate technology and producing in small series, instead of creating large-scale units, because of the present limited size of markets.

25. Small- and medium-scale manufacturers in more advanced developing countries and industrialized countries can play a significant role in co-operation programmes for the development of the agricultural machinery industry directed towards achieving the long-term goal of self-reliance in the sector. The small- and medium-scale enterprises of developed countries, because of their ability to adapt their production to demand and their capability of manufacturing a wide range of products, have the necessary flexibility to transmit many innovative ideas to meet the diversified needs of developing countries using new forms of industrial co-operation.

26. There is thus a scope and potential for the expansion of economic and technical co-operation on a South-South basis with emphasis on small- and medium-scale enterprises. For example, in other more advanced developing countries and developed countries an efficient small-scale industrial sector has been developed that could be of tremendous interest to African countries. Small-scale industries tend to bring about a more broadly-based industrial growth and development in a country. They also tend, in some cases, to have higher manufacturing value added than larger-scale industries, and, moreover, tend to use primarily local raw materials in production. Further, they have a high employment-generation effect, particularly in rural areas.

27. For these and other reasons, co-operation between Africa and Asia and Latin America and the Caribbean should be given careful consideration, provided that the constraints and difficulties hampering such co-operation can be minimized, if not completely eliminated. Besides the lack of infrastructure, technological capability and trained manpower, the main constraints which specifically hinder interregional co-operation for the development of the agricultural machinery industry in developing countries, particularly in Africa, are a lack of capital for the required investments,

small and widely scattered markets, and insufficient exchange of information. 6/ These problems could be solved through co-operation among producers at national, subregional, regional and interregional levels. The problem of small domestic markets could be overcome at subregional and regional levels by pooling markets and rationalizing production within regions and sub-regions.

28. As regards the shortage of foreign exchange for acquiring technology, equipment, technical services and other inputs that have to be imported, developing countries should also consider the development of additional possibilities for countertrade, which has at present reached about 30 per cent of total world trade 7/, as a means for financing imports.

29. In order to promote regional and interregional co-operation, Governments of developing countries should define, adopt and implement industrial policies and strategies that facilitate the integration of markets and provide such resources as finance, manpower and technology needed for the promotion of the agricultural machinery sector. Effective industrial support is required, involving, among other things, clear and precise formulation of agricultural mechanization policies, plans and programmes, industrial information and training, and industrial and trade promotion, with the aim of establishing a framework for industrial co-operation in accordance with national development objectives.

30. The Industrial Development Decade for Africa (IDDA) represents a positive framework for co-operation. The commitment of the Heads of State and Government of the Organization for African Unity (OAU) in the Lagos Plan of Action is to accord the major role to industry, reaffirming their determination to change the economic structure of Africa. In this process,

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6/ See: "Strategies for an integrated development of agriculture with local production of irrigation hardware and other agricultural equipment by small- and medium-scale manufacturers" (ID/WG.462/5).

7/ This estimate is taken from the study "The World of Countertrade" by the American Institute of Business Trend Analysis, 1983.

highest priority is given to achieving food self-sufficiency by providing the necessary physical and economic policy conditions for utilizing all the land suitable for cultivation. The second priority is to promote a gradual economic integration at the regional level and to co-ordinate development policies of various countries grouped together geographically, not only to facilitate the creation of preferential subregional markets, but also to co-ordinate the economic policies of African countries in negotiating with non-African economic partners. The goal of the Lagos Plan of Action is the development of industrial activities at the subregional level. Economic integration should be achieved through the creation of effective linkages between industry and agriculture, by providing the infrastructure of agricultural machinery and equipment in the broad sense, that is, irrigation, food processing, storage, and other related equipment. 8/ Programmes of country specialization in production of agricultural inputs are already established. These intra-regional programmes should facilitate co-operation with African partners by taking advantage of the enlarged markets they provide within regional groupings, such as the Preferential Trade Area in Eastern and Southern Africa (PTA) and the Economic Community of West African States (ECOWAS).

III. POINTS FOR DISCUSSION

31. Within the framework of changes in the world economy, the development of the agricultural machinery industry in developing countries in general and in Africa in particular should be based on increasing self-reliance, co-operation between developing countries and co-operation between developing and developed countries. The participants at the Consultation, in their deliberations

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8/ See: ID/WG.462/5, op.cit.

directed towards arriving at a clearer understanding of the problems related to the sector and consideration of measures for overcoming these problems, are invited to focus their discussions on the following points:

(a) The assessment of specific possibilities for interregional co-operation between developed and developing countries and between developing countries themselves, with emphasis on small- and medium-scale enterprises involved in the development of the agricultural machinery industry;

(b) Analysis of the main internal and external constraints with the objective of facilitating and improving such co-operation;

(c) Development of co-operation on building up and strengthening of institutions dealing with training, design, research and development, repair, maintenance, etc. One possibility that should be examined in this context is the twinning of institutions in the developing countries with those of industrialized countries or of other developing countries, with specific interlinked work programmes. A further possibility that should be considered is the promotion of subregional and regional networks of these institutions.

(d) Identification of main aspects (technical, economic, legal) to be considered in order to establish a framework for industrial co-operation. In this context, it is necessary to examine the possible role of regional development banks in financing such co-operation as well as the possible contribution of UNIDO and other international organizations to the establishment of that framework.